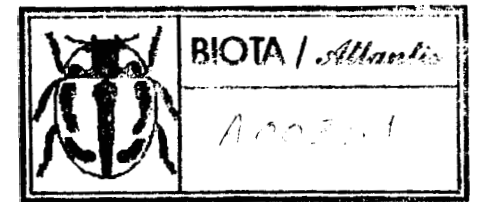


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Orthoptera in the Canary Islands

E. Burr

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baeteri form, of *L. nickerlii*, and of the genitalia of both *L. guenei* and *L. testacea*. Unfortunately, the legend on the plate is inadequate and misleading, and the undoubted difference of the imagines figured is minimised by the dominance of the deep black background.

In the March number of the succeeding volume of the *Entomologist*, vol. xlviii, pp. 75-78 (1910), Mr. E. R. Banks, traces the history of the three original specimens of *L. guenei* since their capture in 1862 (?), gives the results of his careful comparison of the type specimens with the two species *L. testacea* and *L. nickerlii*, in favour of absolute distinction, discusses the idea of time changing the colour suffusion of var. *baeteri* to the "pale testaceous" of the type, and withholds his judgment as to the specific distinction of *L. nickerlii*, until more definite knowledge is forthcoming. At the same time he utters a word of warning against the modern tendency, to consider the distinctness of the form of the genitalia as the final and predominant test in the differentiation of species.

(To be continued.)

Orthoptera in the Canary Islands.

By MALCOLM BURR, D.Sc., F.E.S., F.L.S., F.Z.S.

For many years I had been looking forward to an opportunity of collecting in the Canary Islands. The Fauna is so interesting, and contains so large a proportion of peculiar forms that, although species are not numerous, the islands are well worth systematic collecting.

The first and most important modern contribution to our knowledge of their Orthoptera is a paper by Krauss, entitled *Systematisches Verzeichniss der Canarischen Dermapteren und Orthopteren mit Diagnosen der neuen Gattungen und Arten*, published in the *Zoologischer Anzeiger*, no. 390, 1892. Including records from all sources, Krauss enumerated sixty-four species, including Dermaptera; of these he describes thirteen as new, and erects six new genera, for one of which he requires a new sub-family. Most of the material was collected on an expedition to the islands in May and June, 1889, by Brunner von Wattenwyl, Krauss, and A. Picet. A disadvantage of a visit so early in the season is, that some of the new forms are only found in an immature condition. For instance, the remarkable creature *Orophila nubigena*, Kr., which has features recalling both the *Meconeminae* and *Pseudophyllinae*, and yet requires a new tribal name, *Orophillinae*, is only known from an immature male.

In the following year, 1893, Bolivar published (*Act. Soc. Españ. H.N.* (2), ii, 1893, p. 35) an account of the Orthoptera of the Canaries based on material collected there by M. Charles Alluaud. Bolivar added one or two novelties, and gives a catalogue of Canarian species from all sources, enumerating 75; this number is approximately correct, since one or two of the doubtful ones must probably be suppressed, and a few new ones have been described since.

We landed at Las Palmas, capital of the Grand Canary, early in the morning of Friday, September 9th, and at once drove up to the village of Santa Brigida, near which there is a comfortable hotel, where we made our headquarters for about a week.

The scenery is quite meridional: the red volcanic earth all burnt

brown, the monotony relieved by some graceful palms, and clumps of agave and cactus; in the lower levels the deep green patches of the banana plantations stand out prominently. On the higher ground some scrubby trees are bent double with the force of the prevailing wind from the west. The neighbourhood of Santa Brigida is too cultivated to afford good collecting: the ground consists of a mass of round black gravel, worn lava, out of which the vines grow in profusion, divided into fields separated by hedges of cactus and agave mingled with brambles, enlivened by brilliant red clumps of woody geraniums. I spent many hours wandering about and turning over countless stones in the hopes of coming across some of the peculiar earwigs, but it was rare to find a living insect. On one hilltop, free from cultivation, I found a fair number of *Caloptenus vulcanius*, Kr., a well-marked local representative of the Mediterranean *C. italicus*, with a banded variety *bifasciata*, Kr., corresponding to the variety *marginellus*, Serv., of the Mediterranean form. It is quite a good species, and very distinct. It seems to be the common grasshopper of the islands, being found in numbers nearly everywhere. In addition to the intensity of cultivation, collecting was rendered difficult by stormy weather; gusts of violent wind sprang up frequently and dropped again with startling suddenness, and we rarely saw the sun during our stay in the Grand Canary, weather which I was informed, as usual, was unknown to the oldest inhabitant at this season.

We made an excursion to the Gran Caldera, an extinct crater of perfect form where it appears that the lavas never actually overflowed, but sank back into the crater; it is almost perfectly circular, about a mile in diameter, and nearly a thousand feet deep from rim to the base, which is, of course, cultivated; the walls are vertical, except where covered by the slope of the talus; agave, cactus, and the local *Euphorbia*, like fat podgy fingers, grow round the rim.

Caloptenus vulcanius was very abundant; in the lower levels, *Platycleis grisea*, Fabr., is common; there were a few specimens of *Oedipoda canariensis*, Kr., a local form of the common *O. caerulea*, L., differing in the narrower vertex, more rugose head and pronotum, feebler band and paler colour of the wings; it hardly deserves specific rank. Looking under stones produced nothing but a nymph of *Liogryllus bimaculatus*, De Geer, the common cricket of the islands; this is interesting, for it is the African representative of *L. campestris*, L., which does not apparently occur in the islands. Crawling in some burnt up grass, I found a bull female of *Parames limbata*, Brullé, a purely local species, which represents the various species of *Ameles* occurring in the Iberian Peninsula.

Below the village of Santa Brigida, a grand and deep ravine, the Barranco de Tirajana, runs down to the coast; a rivulet in the dry season, it is a good torrent in the spring, and here collecting was more profitable.

A clump of stones near a farm house produced the ubiquitous *Anisotabis annulipes*, Lac., in numbers, and also *A. maxima*, Brullé. This is one of the finest of the genus, well-developed specimens rivaling in size even the gigantic Australian *A. colossa*, Dohrn; the specific characters are well marked, but adult specimens were rare. *Mantis religiosa*, L., was fairly common, and where grass was growing, *Epacromia thalassina*, Fabr., and *E. strepens* were abundant; *Pachytiglus*

danicus, L., too, was common, and also *Caloptenus vulcanius*. Sweeping among shrubs produced an occasional specimen of *Arminia brunneri*, Kr., a monotypic genus confined to the islands. Krauss records it from Tenerife, but I only found it in the Grand Canary, in various parts of the Barranco de Tinejuna, never common. It is related to *Platyphyma*, Fisch., which is abundantly represented in the south of Europe by the stumpy little frog-like *P. giornae*, Rossi, but can never be mistaken for it; apart from the structural differences in the head and elsewhere, it is a much more slender insect; the male, in fact, is quite an elegant creature. *Trigonidium cicindeloides*, Serv., was fairly numerous in some moist grass at one spot; it is a very curious creature, and hardly looks like a cricket; the long yellow hind legs make a great contrast with the shining dark blue beetle-like elytra. It is a highly specialised creature, is incapable of flight, and yet has a very wide distribution.

Platyceles grisea, Fabr., and *P. tessellata*, Charp., were also quite common in the same locality. In the nearly dry bed of the river itself, at the bottom of the gorge, *Liogryllus bimaculatus*, De G., was very numerous under stones, usually in pairs. *Conocephalus mandibularis*, Chnpp., was fairly common among grass; the only other species that we observed in the island was *Acrotylus patruelis*, Sturm., which is abundant in the beautiful gardens of the Hotel Catalina, near the port, and probably everywhere also in suitable situations.

On September 15th, we landed at Santa Cruz, the port of Tenerife, after a sleepless night on an abominable Spanish mail of 684 tons, the "Lcoñ y Castillo" advertised as a "magnificent new screw steamer." The island of Tenerife is really a cordillera of volcanic ridges culminating in the famous Rico de Teyde, towering up to an altitude of over 12,000 ft. in the south; the flanks are consequently very steep, and on the sheltered side, protected from the Atlantic by the hills, everything is burnt and brown, with not so much as a palm-tree to relieve the desiccated monotony; there was no temptation to stop and collect here. About 2,000 feet we reached the old town of La Laguna, in the midst of a fertile plateau, that witnessed the final stand of the aboriginal Guanches against the invading Spaniard; the contrast between La Laguna and Santa Cruz is very striking; the latter is a typical southern port, with white houses and green Persian blinds, all glittering in the sun; the former is a grim, rather gloomy, Spanish provincial town; the grey houses, old doorways with time-worn armorial bearings, and lofty towers, make the traveller think that he is among the hills of northern Aragon, or in the sunburnt valley of the Ebro.

We arrived on the morning after a "fiesta," when there was no accommodation available, so we were obliged to push on to the next village, but before leaving, I called on Don Anatol Cabrera, a surgeon in practice in the town, and a well-known entomologist. I was fortunate enough to find him at home, and was not once overwhelmed with information as to collecting grounds and the kindly gift of a boxful of specimens; Don Anatol's generosity was almost embarrassing, for he pressed upon me specimens that are rare and difficult to find, saying he would be able to obtain more. My gratitude at the time was even increased when we left the island some ten days later, for I was not destined to find many of the rare and peculiar species, which he begged

me to accept. Among these were a pair of *Hypsicorypha juliae*, Kr., a remarkable cone-headed mantis, representing the Mediterranean *Empusa*, and Ethiopian *Idolomorpha*. It is apparently confined to Tenerife but is not common, and I was not fortunate enough to come across one. In addition, the genial doctor gave me a series of *Anataelia canariensis*, Bol., one of the most interesting earwigs known. It was discovered many years ago by Don Anatol, under stones, near the village of Bajamar, on the western coast of the island, and sent for determination to Bolivar, who found it necessary to erect for it a new genus, which he named *Anataelia* after its discoverer. It has the antennae and sternum of the *Labiduridae*, and the legs of the *Pygidiacranidae*; it is totally apterous and has a peculiar formation of thoracic plates. The only other known species which resembles it at all is *Challia fletcheri*, Burr, a native of Korea, these two monotypic genera requiring a subfamily to themselves, the *Anataelinae*. Dr. Cabrera has looked carefully for it in many parts of the island, and has always kept his eye open for it when collecting beetles, but he has never found it except in a certain portion of a plot of stony ground, a few hundred yards long and about fifty broad, near the village of Bajamar. This is surely one of the most remarkable recorded instances of restricted distribution.

Don Anatol also gave me specimens of *Forficula cabreræ*, Bol., and *F. guancharia*, Heller, which I failed to find during all my excursions, in spite of diligent search. I was equally unsuccessful in my hunt for *F. canariensis*, Burr, and *F. uxoris*, Heller. These four species of *Forficula* are restricted to the Canaries, perhaps even to the island of Tenerife, and all appear to be rare; in all, the wings are aborted and the abbreviation has attacked the elytra. It may be necessary to form a special genus for their reception, and even eventually be proved that they are all variants of a single species.

(To be continued.)

Stenus formicetorum, Mannerheim, a beetle new to Britain.

By HERWARD C. DOLLMAN, F.E.S.

I have much pleasure in introducing this *Stenus* to the British list. Mannerheim's original description (published *Bull. Mosc.*, 1818, p. 83) is:—

Stenus formicetorum, Mann. : plumbeo-niger, capite, thorace, elytrisque profunde foveolato-punctatus, parvo cinereo-pubescent, abdomine fortiter minus dense punctato, immarginato. Longit. 3.1 lin. Bis captus. *S. nigritale*, Gyllen., Erichs. vicinus, sed multo minor, brevior, et punctis multo majoribus in thorace et elytris impressis, totus plumbeo-niger parvo cinereo-pubescent. Antenne breviusculæ, articulo tertio quarto parum longiore, totæ nigrae. Palpi etiam nigri. Caput cum oculis thorace fere sesqui latius, fortiter profundeque punctatum, fronte obsolete late bisulcata, interstitio leviter elevato, oculis maximis globosis prominulis. Thorax coleopteris dimidio angustior, lateribus rotundatus, basi apiceque latitudine fere æqualis vel ibi coleopteris dimidio angustior, latitudine summa paullo longior, æqualis, undique punctis majusculis fortiter impressis, interstitiis planis. Elytra thoracis longitudine, eodem modo punctata, æqualia. Abdomen breviusculum, apicem versus sensim leviterque angustatum, parvis et subtilius quam thorax et elytra punctatum, immarginatum. Pedes toti nigri. Femina abdominis segmento inferiore sexto apice rotundato. Mas latet.

With the aid of Ganglbauer's table Mr. Donisthorpe and I ran the species down as *S. formicetorum*, Mannh.; his description of the species

frequent, in good condition, but what *Kingia spini* there were, were worn. On the famous cherry trees near the Baths, busily sucking at the fruit, and in the orchard near the entrance to the cross gorge (so replete with the juice exuding from the trunks of the apple trees that we could approach almost near enough to touch them, without disturbing them), were both *Satyrus circe* and *S. hermione*, both species very enough at the slightest movement of the net. Neither of these species appeared to be as numerous as in better years, both were evidently scattered over the whole district, as individuals were met with everywhere; the locality of the Baths is without doubt the most prolific. M. Cotte says they are fresh right down to September, as they do not fly much unless disturbed. We certainly found them in good condition up to August 4th (when we left Digne), those rejected being more often chipped or damaged than worn. One had to work persistently, however, to get a series of *S. circe* which, if easy to catch under certain conditions (such as sap-imbibing), is more elusive under others, and will persist in rising at the swing of the net, only to settle a little higher on the tree, in as awkward a position on a branch as it can select.

In the cross gorge we found *Satyrus alcyon*, also in good condition, but no *S. hermione*; while on the trees near the Baths were *S. hermione*, but no *S. alcyon*. If these are one and the same species, as some entomologists argue, why is it that within a short distance of each other their sizes and their habits are so different? *S. hermione* rests on trees, and is partial to sap and the juices of fruits; it also settles on the road, often in the shade of trees, but will generally be found to have been attracted by some over-ripe fruit which has dropped from them; while *S. alcyon* is a smaller insect, and both at Aigle and in the cross gorge at Digne, settles on rocks, or on the ground near them, but does not seem to trouble about fruit. *S. alcyon* and *S. cordula* were found flying together, while *S. hermione* was associated with *S. circe*.

The first *S. filia* ♂ appeared on the 20th, two more on the 30th, and two on the 31st; all perfect specimens. The broods of *S. cordula* and *S. actaea* this year almost coincided; our first *S. actaea* being taken on the 31st. *Enodia dryas* at this date were passé, as were also some of the *S. cordula*, but others were very fine, especially some of the females. After taking a number of *S. cordula* and *S. actaea*, one has no doubt that they are distinct species, it being quite easy to distinguish between them even on the wing. Of the genus *Hipparchia*, *H. briseis* ♂ was first taken on the 29th, on the right bank of the Eaux Chaudes, while *H. arethusa* ♂ did not emerge till August 2nd; but on the 4th, eleven ♂s were captured, just out of pupa. *H. semele* was met with from the 25th, onwards. Thus, out of eleven species of *Satyridae*, we obtained ten, the only one missing being *S. statilius*, which was not out by August 4th, but which is usually common at Digne.

Occasional specimens of quite fresh *Gonepteryx cleopatra* were taken. What a grand insect this is, as it flashes rapidly by one, displaying the orange flushes on its upper wings in the brilliant sunlight which it loves, or flying along the precipitous sides of a gorge, at a tantalising height above one's reach!

Polyommatus meleager ♂s were captured on the 25th; ♀s not

being seen till August 4th. The males fly with a crowd of other blues both near the entrance to the gorge and on the Dourbes road near the river, being difficult to distinguish, while on the wing in the brilliant light from the commoner *P. coridon* and *P. damon*. Among the other "blues" on the road we found two *Hiruntina abietis* var. *rippertii* ♂s. *P. hylas* was frequent on the right bank of the Eaux Chaudes, on the 29th, and *P. escheri* on the 30th. Other captures included three beautiful *Limenitis camilla* (two of which were in cop.), a fine *Pyrameis cardui* on the road near the Baths on the 28th. (the only one seen), a few *Loweia alciphron* var. *gordius* in the gorge on the 25th; one or two fresh *Melanargia galatea* var. *prociata* on the 31st, on which date most specimens were passé, a few *Loweia dotilis* and the first two *Nerebia neoridas* on August 2nd; a single *Bithys quercus* on trees near the Baths on the same date; together with one worn *Apatura ilia* ♀ and two ragged *Pyrameis atalanta*. *Papilio alexanor* was frequent on the 26th (but the worse for wear, and often with mutilated tails), flying along the precipitous sides of the gorge; while *P. podalirius* was much more common, and flew very strongly when the wind was high, ducking and dodging the net very cleverly. *Parnassius apollo* was only in fair condition on the 25th but with some of the spots inclining to yellow. Larvæ of *Papilio alexanor* were taken on August 4th, by M. Jouffret, an entomologist residing at Digne; these were mostly small, but a few were more than half fed; he also showed us *Polyommatus meleager* ♀s taken near the Baths on July 31st. *Leptasia sinapis*, *Epinephela lycaon* and *Melitaea diduma* were frequent on the river bed at the entrance to the gorge.

The heat at Digne in August is light and dry, and is tempered by a strong wind, which springs up each morning about eleven, and blows against one all the way back from the Baths. Following the advice given by Mr. Rowland Brown (see *antea*, vol. xii, p. 57, etc.), we got out as early as possible each morning; the hot tudge under the rocks is not so tiring at 5 a.m. as it becomes later on in the day. We collected till midday, returning to the hotel for lunch and siesta; it became possible to commence setting about 6 p.m., when all Digne takes its constitutional under the trees in the Boulevard Gassendi, and the hum of voices gradually increases to a confused hubbub of laughter and chatter.

From July 24th to August 4th, with the exception of one rather dull and rainy morning, the sky was cloudless, and the sun brilliant. In this I believe we were peculiarly fortunate, reports from other districts being most unfavourable. I do not believe, however, that insects were nearly so numerous as usual, especially in the Petit Vallon, the cold wet spring having worked as much havoc among them as it did among the fruit.

The Orthoptera in the Canary Islands.

By MALCOLM BURN, D.Sc., M.A., F.E.S., F.L.S., F.Z.S.

(Continued from page 95).

We took up our headquarters at Tacoronte, a rather picturesque, scattered village, on the edge of the plateau, where the road begins to drop to the western coast of the island and valley of Orotava. We

had now definitely left the dull cloudy weather behind, and enjoyed a clear blue sky and hot sun, relieved by a fresh breeze from the sea; the evenings were cool, if not quite cold. The neighbourhood of the village is given up to the vine and to vegetables; beans do well at this altitude, something over 2,000 feet, and the villagers are particularly proud of their cabbages. An occasional palm-tree reminds us that we are in low latitudes, and the fine dragon-tree down the village shows that we have not left the Canaries.

In the daytime and the dusk, the stridulation of *Decticus albifrons*, Fabr., keeps the air alive, and at night *Ligryllus bimaculatus* takes up the chorus. The former, which I failed to see in the Grand Canary, is abundant everywhere in Tenerife. Its stridulation cannot be distinguished, by memory, at all events, from that of its northern congener *D. verrucivorus*, L., *Epaeromia thalassina*, Fabr., swarms in the hedgerows, and *E. strepens*, *Platyteleis grisea* and *Pl. tessellata* are abundant, as also is *Pachytylus danicus*. *Anisotabis annulipes* is fairly common under stones, and *Oecanthus pellucens*, Scop., is fairly numerous. *Phaneroptera nana*, Charp., is common in the herbage in the little "barrancos" or ravines.

A mile or two below the village, there is a row of low rounded hills; these are "fumarole," and some have the little crater well preserved on their summit. On one of these I found *Mantis religiosa*, common, *Epaeromia thalassina* and *E. strepens* in swarms, *Acrotylus patricis*, Sturm., common, *Caloptenus vulcanius*, common, *Pachytylus danicus*, common, *Phaneroptera nana*, Charp., *Platyteleis grisea*, Fabr., and *Decticus albifrons*, Fabr., numerous, and *Oecanthus pellucens*, Scop., common. I looked in vain for earwigs, but found *Hololampra bivittata*, Vrohlk., in numbers among the pine-needles; young larvae and nymphs were in a great majority, adult females rare, and adult males almost unfindable. This species is peculiar to the island.

We moved down to Puerto Orotava as a base for the excursion up the peak; as the bluff is rounded on the road down, the view of the famous valley is indescribably beautiful; a long sweeping depression stretches before the traveller, green with vineyard and banana plantations, dotted with white houses, the deep blue sea on one side, a rugged row of red mountains on the other, and the mighty cone of the peak beyond, rearing his majestic head far above the clouds. When Humboldt paid his classic visit to Tenerife, and this sight burst upon his gaze, he fell to the ground to salute the finest sight in the world. It may indeed rank with the Bocche di Cattaro, or the bay of Rio de Janeiro.

The ascent of the peak involves great fatigue, but is abundantly worth any cost or labour. On the coast itself, *Acrotylus patricis*, Sturm., and *Sphingonotus caeruleus*, L., are abundant; through the zone of bananas, there is little insect life; near the top of the zone of the vine, from 2,000 to 3,000 feet, the usual species were common, with the addition of a few specimens of *Stauronotus maroccanus*, Thunb., and *Edalena senegalensis*, Kr., the latter interesting as being the Ethiopian representative of the common Mediterranean *O. nipofasciatus*, De Geer. At about 4,000 feet we enter the Monte Verde, where there is no more cultivation, but dense thickets of "breso," a kind of shrubby heath, usually bathed in cloud; as we go higher, the "breso" is replaced by a woody stunted shrub, the "codeso," growing

among the barren rocks. *Caloptenus vulcanius* was the only Orthopteron noticed here. We caught a glimpse of one bird peculiar to the peak, *Fringilla teydenis*, a handsome slate-blue chaffinch, but saw no other birds beyond an occasional kestrel at the lower levels, and a handsome soaring Egyptian vulture. Above 7,000 feet, the path suddenly becomes less steep as we enter the "cañadas." This is an extensive plain, very flat, the bed of an enormous ancient crater, bounded by vertical walls of basalt.

The ground is a mass of small, rounded, soft buff or orange pebbles, that afford springy and agreeable walking; huge blocks of irregular dark red trachytic lava lie haphazard over the plain, the only relief to which is afforded by numerous green clumps of the "retama," *Retama rhodorhizoides*, the famous broom that grows here only, the only vegetation above the 7,000 feet level. We rode for over an hour over this plain, where the only insect life observed consisted of swarms of *Caloptenus vulcanius*, and *Sphingonotus caeruleus*, which was more numerous here than on the coast itself. As we approached the huge cone of the peak, standing like a solitary pyramid in the midst of the plain, we climbed the Montaña Blanca, a mass of pumice, and then by a steep and winding path up the base of the cone, to a stoio hut, Alta Vista, built by an Englishman, to his eternal glory, on a spur between two black lava streams, at 10,702 feet. Our guides brought up dead "retama" wood, for the last plant was left behind at about 9,000 feet, for fire to cook our frugal supper and make coffee to warm our frozen bodies, for when the sun went down behind the peak and threw its great black conical shadow on the peaks and clouds on the east, the cold was biting and penetrating.

Of the ascent to the summit of the cone itself, this is scarcely the place to write, for of entomology we saw nothing. The crater is a small cup-like depression, white with sulphur salts, with yellow patches of crystalline sulphur, with puffs of sulphurous vapour oozing out from the ground on all sides; not our feet, the pink plain of the "cañadas"; beyond, the jagged cordillera of the island, the coastline standing out sharp against the blue sea, twelve thousand feet below us, like a map; the gaping vent of Mount Chahorra, with black lava streams all round, and last year's crater, like an open wound, bleeding black lava, a sore upon the landscape; then the Grand Canary on the east, looking but a mile or two away, really over fifty miles distant; in the west, the green isles of Hierro and La Palma. Until the sun was high, a keen wind numbed our hands, and we had been glad of thick clothes and heavy overcoat in which to climb the last 2,000 feet. When we found once more the welcome shelter of the stoio hut, a couple of glasses of steaming hot wine put fresh life into our frozen veins.

Upon returning to Tencoronte, we made an excursion to Bajamar, in the hopes of finding the *Anataelia*; Dr. Cabrera had described to me the exact spot very carefully, and drawn a sketch map, so that there was no doubt whatever about being on the correct spot; it was a flat, stony waste, and I spent four hours tearing my hands and crushing my fingers by turning over stones; my oily bag was a male *Forficula auricularia*, one or two *Anisotabis annulipes*, and one or two *A. maxima*. It was a great disappointment. I am uncertain whether to attribute my want of success to sheer ill-luck, or to the possible great scarcity

of the insect, for it is conceivable that so peculiar a species, with so restricted a distribution, may be verging upon extinction, and I believe it is a good many years since Don Anatael took a specimen; the season was correct, for we were there on September 22nd; it was in October that it was first taken.

As we drove back to Tacoronto, the heat became oppressive, and next morning a perfect gale was blowing, the "levante" or "tempo del sur," which corresponds to the sirocco of the Mediterranean, a hot wind blowing a fine red dust from the African desert, picking up clouds of dirt and powder from the road, which penetrate everything, and make life exceedingly disagreeable. I struggled in the teeth of this hot wind, filling eyes, ears, nostrils and skin with dry brown dirt, to the forest of Agua Garcia, where the Giant Heath grows to a height of fifty feet, yet is dwarfed by the huge laurel trees, with roots of terrific girth; the forest was cut by glades and shady ravines, sheltered from wind and sun, refreshed occasionally by a welcome spring of icy water. Here I looked carefully, at Don Anatael's suggestion, especially among the roots of the laurels, for *Forficula guancharia*, Heller, and *Holocompsa simonyi*, Kr., both peculiar species, but found nothing beyond a few specimens of *Hololampra bivittata*, Kr., nymphs and females only. On the outskirts of the wood, the usual species were abundant, *Epacromia thalassina*, *E. strepens*, *Caloptenus vulcanius*, *Oedaleus senegalensis*, *Platygleis grisea*, *Pl. tessellata*, *Decticus albifrons*, a few *Mantis religiosa*, and *Phaneroptera nana*.

Don Anatael had especially advised me to search the thickets of "maljurada," or St. John's Wort, for *Orophila nubigena*, Kr., but I never saw a specimen. Sweeping produced, however, a number of locustine nymphs, which I attributed to *Calliphona*, Kr. This determination was verified soon by the capture of a fine female *Calliphona königi*, Kr. *Calliphona* is the local representative of the European genus *Locusta*, to which it is related. There are two species, *C. königi*, Kr., with abbreviated elytra, corresponding to *L. cantans*, and *C. allaudi*, Bol., corresponding to *L. viridissima*, L. They are handsome green insects, of a large and more powerful build than the two *Locusta* referred to, resembling rather the East European *L. caudata*. While searching diligently in the scrub and grass, I caught a pair of *Ariagona margaritae*, Kr., an apterous Dectid, allied to *Anterastes*, Brunner, and *Olynthoscelis*, Fieb. The genus is confined to the islands, and appears to be rare. Simony took it in the island of Hierro, and Krauss in Tenerife, but Don Anatael did not seem to have come across it.

I was still looking for a male *Calliphona*, and listening intently to all the stridulation around, detected nothing but the intermittent buzz of *Decticus albifrons* on all sides, when suddenly my ears were delighted by a loud and persistent shrill, like that of *Locusta*, but higher pitched, almost a whistle. I felt certain it must be a *Calliphona*, and stalked it down with patience, till I was rewarded by seeing a fine male *C. königi* sitting on a St. John's Wort, looking like a great green *Ephippigera*.

Thus my luck had turned, and though I had failed to find any one of the peculiar carwigs that I specially hunted for, nor *Physicorhpha*, nor *Blepharis*, the local leaf-Mantis, nor *Orophila*, I had in the last few minutes' collecting in the islands come across two of the most interesting Locustids of this fascinating fauna.

(To be concluded).

CURRENT NOTES,

During the past month we visited the Annual Exhibition of the Royal Photographic Society of Great Britain, held at Prince's Skating Club, W. Our attention was mainly directed to the Sections devoted to Natural History and Scientific Photography. These contained some of the most interesting and most successful work as of course might be expected when we mention such familiar names as those of Hugh Main, B.Sc., F.E.S., A. E. Tonge, F.E.S., A. H. Hamm, F.N.R.S., C. W. Colthrup, A. W. Dennis, and James Ward, F.E.S., as being in the list of exhibitors.

Mr. Hugh Main's exhibit consisted of a series of prints illustrating the Life History of the beautiful and delicate lace-wing fly, *Chrysopa flava*, together with a series showing the larva (ventral and dorsal views), pupa (ventral and dorsal views), and the imago of the musk beetle, *Aromia moschata*; Mr. A. E. Tonge had illustrated the Life-cycle of *Apatura iris*; Mr. A. H. Hamm had a series of prints to show the resting position and the protective resemblance attained by *Bryophila muralis* and *B. perla*; and Mr. C. W. Colthrup contributed a series of photographs of the resting attitudes of several species of moths. It is difficult to say which were the most successful of these, they were all beyond criticism and each exhibitor maintained his high standard of excellence in his own particular line of work.

But why, Oh! why were these beautiful productions relegated to a quite subordinate and bad position in the rooms? Why should such delicate works be hung in a very dark remote corner where the shadow of the electric light made it well-nigh impossible even with gymnastic efforts to see sufficiently well to fully appreciate them? We hope that on another occasion those responsible for the hanging will recognise the fact that there is nothing nebulous about Natural History Photography, it will stand the best of lighting, and in future may such excellent work receive better recognition from the Committee.

We had almost forgotten to mention the excellent photograph of one of our best known London natural history workers, that of Fred Enoch, Esq., F.L.S., F.E.S., F.R.H.S., of which a capital reproduction was given in the illustrated catalogue of the exhibition.—H.E.P.

In the March number of the *Canadian Entomologist*, L. W. Swett, of Boston, has begun a series of papers on the genus *Hydriomena*, which includes our species of *Hypsipetes*, but in America has a much more extended significance than our British genus is considered to comprise. In the May number F. H. Wolley Dod continues his valuable notes on the Lepidoptera of that little known area Alberta, and A. Gibson of Ottawa, commences a series of Studies in the Life-histories of Canadian Noctuidae.

An *Illustrated Descriptive Catalogue of the Coleoptera or Beetles (exclusive of the Rhynchophora) known to occur in Indiana*, has just been sent to us by the author, Professor W. L. Blatchley, of Indianapolis, U.S.A. In the libraries of some of our London Societies we have often noted the row of bulky volumes issued by the Department of Geology and Natural Resources (including Natural History) of Indiana, containing a vast amount of facts, results of surveys, details of experimental work, possibilities of natural resources, as well as most comprehensive reports on "Mammals," "Reptiles and Batrachians," "Butter-

the Domogled and occasionally quite fresh, though, as was natural at this date, the ♀s were commoner than the ♂s.

The last species of interest at Herculesbad that we shall mention here was *Melanargia galatea* var. *proclia*, which was very fine and abundant; but we did not meet with a single ♀ during the whole of our stay, nor were we fortunate enough to find the extreme melanic form, ab. *turcica*.

On July 16th we made an exceedingly hot journey back to Budapest, and on the following day we visited the Sváb-Hegy with better hopes of success than we had had on June 24th. We repeated the visit on July 18th and 20th, and on each occasion we were richly rewarded by this remarkable locality. The tiny *Pyrgus orbifer* was one of the species that we particularly wished to find, and fortunately the second brood was just beginning to appear; its small size renders this species very difficult to see and to catch, but we obtained five ♂s all quite fresh. Another interesting species was *Hirsutiina admetus*, which, though very much confined to a spot on the north side of the hill, was very abundant, so that we were able to take a good series of both sexes. We also searched carefully for *Lycaena iola*, but in spite of the large amount of *Colutea* to be found growing on the western slopes of the hill this species seemed to be scarce and only five specimens were obtained, of which three were worth keeping. *P. meyeri* was fairly common and in fine condition, but *Agriades coridon* was quite scarce; of the latter species we took ten specimens which call for no special remark except that even this short series includes two pronounced examples of ab. *obsoleta* (♂ and ♀), and one of ab. *arcuata* (♂). A rather undersized race of *Celias hyale* was to be found here, showing a marked tendency towards obsolescence of the central orange spot on the upperside hind-wing. Of the *Satyrinae* in this locality *Hipparchia briseis*, which was new to us, was very fresh and plentiful. *Melanargia galatea* was also exceedingly common, and we obtained a considerable number of the interesting form ab. ♀ *leucomelas*, two or three of which were easily induced to lay, or rather, drop, about four score eggs in their peculiar and negligent fashion. These hatched during September and began to feed on a tuft of *Dactylis glomerata*; it remains to be seen whether they have survived the winter. (We fear this must now be answered in the negative, June 19th.) Our other captures on the Sváb-Hegy included: *Erynnis alea*, *Chrysophanus thersamon* (one ♀), *Scotitantes baton*, *S. orion*, *Everses argiades*, *Dryas pandora*, *Argynnis aglaia* var. *eleodora*, *Melitara didyma*, *Leptidia sinapis* var. *erysimi*, *Epinephile lycaon* (plentiful in certain places), and *Satyrus circe*.

The afternoon of July 19th, we spent in visiting the well-known locality for the two coppers, *Chrysophanus rutilus* and *C. thersamon*, which has been fully described by Mr. Sheldon. We had some difficulty in identifying the locality, as some of the previous descriptions are rather misleading, but now we feel no doubt that the simplest way of reaching it is to take the tram as far as the outskirts of Budafoke (Promontory), and then to follow the path and stream which meet the right-hand side of the road at this point. At this date, the hay having been cut, the meadows were quite dry and looked most unpromising. For the first two or three miles we met with nothing of interest except a small race of *Coenonympha iphis*, and we began to fear that we were too early for the *Chrysophanids*. Finally, however, when we had

nearly reached Kamaraerdo, we obtained a single ♂ of *C. rutilus*, the only one of the species that we saw; this specimen is fresh but of very small size (84mm.). A little further on we found numbers of *C. thersamon*. This species was localised but plentiful where it occurred, and for the most part in good condition.

This completes the record of our entomological experiences in Hungary. The season was undoubtedly not as good at Herculesbad as it had been in previous years, but we are on the whole very well satisfied; we were fortunate enough to meet with practically every species that we had any right to expect, and, in addition, we made the unexpected capture of *A. anteros*.

While at Buda-Pest we visited the National Museum and Dr. Schmidt was kind enough to shew us the collection of Hungarian Lepidoptera. Dr. Schmidt had himself just returned from a collecting expedition to the Hungarian fen-lands and appeared to be very much pleased with his captures, which included several typical English fen-land species, such as *Macrophaster arundinis* (castaneae) and *Phlyctaenia ciliaris*. He informed us that this year (1910), even the Museum officials had not yet been able to obtain from the Crown authorities in Vienna permission to collect at Peszër, the ostensible reason being the preservation of somewhat hypothetical gniiio. Dr. Schmidt's courtesy was characteristic of the general attitude of Hungarians towards the English visitor.

1. "A Fortnight's Collecting at Budapest." By W. E. Nicholson, F.E.S. *Entomologist*, June, 1893, Vol. 26, p. 191.

2. "Two Seasons among the Butterflies of Hungary and Austria." By Margaret F. Founaine, F.E.S. *Entomologist*, December, 1893, Vol. 31, p. 281.

3. "Lepidoptera in Hungary in June." By Albert Hugh Jones, F.E.S. *Entomologist's Record*, November, 1907, Vol. 19, p. 215 and 281.

4. "Collecting in Hungary." By Albert F. Rosa, M.D. *Entomologist*, May, 1909, Vol. 42, p. 108.

5. "The 'Large Copper,' its Habitat, and One of its Present Haunts." By W. G. Sheldon, F.E.S. *Entomologist*, September, 1909, Vol. 42, p. 219.

6. "Six Weeks among Hungarian Butterflies." By W. G. Sheldon, F.E.S. *Entomologist*, October, 1909, Vol. 42, p. 246.

7. "Notes on some Hungarian and Austrian Butterflies in 1910." By W. G. Sheldon, F.E.S. *Entomologist*, October, 1910, Vol. 43, p. 269.

The Orthoptera of the Canary Islands.

By MALCOLM BURR, D.Sc., M.A., F.E.S., F.L.S., F.Z.S.

(Concluded from p. 178.)

The relations between the Canary fauna, as shown by its Orthoptera, and that of the Mediterranean province are very marked, but there is a strong individualist element, with an Ethiopian bias.

The carwigs are characteristic. We need not discuss the cosmopolitan *Labidura riparia*, Pall., *Anisolabis annulipes*, Luc., and *A. maritima*, Bor. *Labia minor*, L., and *Forficula auricularia* are essentially Palearctic species, but are becoming naturalised in North

America, Australia and parts of Africa. These are the only species recorded by Krauss except *Anisolabis maxima*, Brullé, a very striking and well marked earwig peculiar to the islands, and common enough there under stones. *A. major*, Brullé, certainly refers to immature specimens. Since the publication of Krauss' paper, four new species of apterous *Forficula* have been described, namely, *F. cabreræ*, Bol., *F. guancharia*, Heller, *F. canariensis*, Burr, and *F. uzoris*, Heller; they are all rare, the last two being based on unique specimens, all have abbreviated elytra, and probably will require a special genus for their reception. They afford a strongly characteristic feature, but are outdone in peculiarity by *Anataelia canariensis* previously referred to.

In the cockroaches, there are the usual cosmopolitan species, and four endemic species, *Hololampra bivittata*, Brullé, sole representative of an extensive South European apterous genus, *Holocompsa simonyi*, Kr. (Tenerife), and *Loboptera fortunata*, Kr., a good-sized chestnut-coloured representative of the common Mediterranean *L. decipiens*, Germar, only recorded as yet from the island of La Palma. *Holocompsa vestita*, Brullé, has not yet been satisfactorily identified.

In the Mantids, there are four species, with one peculiar genus. The common European *Mantis religiosa*, L., is numerous enough. Then there is *Paramedis limbata*, Brullé, of which *M. gracilis*, Brullé, is probably a synonym, the remarkable *Elepharis mendica*, Fabr., a green and white mottled leaf-mantis, which occurs also in North Africa, and the elegant local representative of the Mediterranean genus *Eupusa* and of the Ethiopian *Idolomorpha*, Sauss., namely *Hypsicorypha juliae*, Kr.

The total absence of *Phasmids* is not remarkable in an insular fauna.

The Acridian fauna is chiefly notable for the poverty in small grasshoppers. *Stenobothrus* is only represented by *S. simonyi*, Kr., discovered by Simony in Lanzarote, and *S. epacromioides*, described first by Krauss from Senegal, where it plays the part of an outlying representative of a truly Palearctic genus. Krauss describes a local variant under the name of var. *nigrovittata*. Simony took *Acrida unguiculata*, Ramb., in the Grand Canary and *Oxyecoryphus compressicollis*, Latr., appears to be the insect referred to by Brullé under the name of *tereticornis*. It has not been recorded since. *Epacromia strepens*, Latr., and *E. thalassina*, Fabr., are both numerous, the latter being perhaps the commonest and most widely distributed grasshopper in the islands. *Stauronotus maroccanus*, Thunb., also occurs. In the *Oedipodidae*, we find *O. canariensis*, Kr., a local race of *O. caerulea*, L., *Sphingonotus caeruleus*, L., is common; in Tenerife, it occurs from sea-level up to nearly 10,000 feet, and there is a local species *S. canariensis*, Lucas, which is imperfectly separated from *S. savignyi*. Krauss records also as distinct *S. asper*, Brullé, from Lanzarote and Graciosa. I have in my collection three old specimens taken by Felt in Lanzarote; they were determined by de Bormans as *Sph. callosus*, but are probably to be referred to *S. asper*, Brullé. All three European species of *Acrotylus* occur, but *A. longipes*, Charp., is the least common. *Thalassomera picteti*, Kr., is peculiar as being a member of a North African, but Palearctic genus.

Oedipoda juscocincta, Luc., an Algerian species, is recorded by Brunner, and the handsome *Quirogesia brullei*, mentioned from several islands, but not found by me, is another species found also in Northern

Africa. *Pachytylus danicus*, L., as might be expected, is quite common. The Mediterranean *Oedipoda nigrofasciatus*, De Geer, is replaced by its Ethiopian representative *O. senegalensis*, Kr.

Of the *Acridiidae* proper, there are but few representatives, but they are all interesting. As we have seen, the common south European *Caloptenus italicus*, L., is replaced in the islands by a local form, *C. volcanius*, Kr. I cannot help feeling that Bolívar's record of *C. italicus* from the blante Verde and the "cañadas" is based on bad evidence. As we have seen, *Arminia brunneri*, Kr., a peculiar monotypic genus, plays the part of *Platyphyma* and *Podisma*. *Dericorys lobata*, Brullé, is another peculiar species with African affinities, being closely allied to *D. bolivari*, Kr., from the Rio de Oro.

The *Pamphagidae* are very naturally not represented, and of the *Tettigidae*, there is but *Paratettix meridionalis*, Ramb.; this is not common.

The *Locustidae* are represented by a few species only, but these are interesting. The only *Phaneropteridae* are *P. nana*, Fieb., recorded by Krauss and Bolívar from several islands.

No *Meconemidae* occur. Of the *Conocephalidae* there is only the common *C. nitidulus*, which is common. *Locusta* is replaced, as we have seen, by a peculiar genus *Calliphona*, Kr., with two species. There is the remarkable insect *Orophila nubigena*, Kr., of which only the imago has so far been described; it is rare, and occurs on St. John's Wort. It has the appearance of a *Pseudophyllid*, and has features in common with that group and the *Meconemidae*: it is so distinct that Krauss found it necessary to form for it a special subfamily, the *Orophilinae*. In the *Decticinae*, *Pecticus albifrons*, Fabr., and *Platypleis grisea*, Fabr., are very common, the local race of the former is distinctly smaller than the typical continental form. The dimensions of my specimens from Tenerife are as follows:—Length of body, ♂ 26-32mm., ♀ 28-33mm.; length of pronotum, ♂ 7-8mm., ♀ 7-8mm.; length of elytra, ♂ 36-41mm., ♀ 39-43mm.; length of post. femora, ♂ 28-30mm., ♀ 31-37mm.; length of ovipositor, ♀ 18-20mm. *P. tessellata*, Charp., *P. intermedia*, Serv., and *P. laticauda*, Brunner, are also recorded. Peculiar is the genus *Ariagona*, Kr., with a single species, *A. margaritar*, Kr., an apterous form allied to *Anterastes*; its supposed rarity is probably to a great extent due to its skulking habits.

There are several species of crickets: the common South European species are: *Oecanthus pellucens*, Scop., *Trigonidium cicindeloides*, Latr., *Gryllus brunneri*, Selys, and *Gryllomorpha longicauda*, Ramb. *Gryllus hispanicus*, Ramb., occurs also in the Spanish Peninsula, and *G. guanchicus*, Kr., is peculiar. *Leogryllus campestris*, L., is replaced by the African *E. bimaculatus*, De Geer, the common cricket of the islands. The European Mole-Cricket, *Gryllotalpa gryllotalpa*, L., is recorded on the slender authority of Brullé; it is probably to be rejected, as suggested by Bolívar, as the Mole-Cricket of the islands appears to be the smaller form, *G. africana*, Pal., taken by Alluaud in the Grand Canary.

To resume, the Orthoptera fauna of the Canaries is not rich, but highly peculiar, and well deserves further investigation; this requires patience and time, as good localities are few and the interesting species are all rare. Up to nearly 3,000 ft. it is hard to find an uncultivated spot, and so as a rule below that limit, only the usual general southern species are common.